

CLAIMS

1. A protein comprising the amino acid sequence of SEQ ID NO: 2 or 4.

2. A protein comprising the amino acid sequence of SEQ ID NO: 2 or 4 in which one or more amino acids are replaced, deleted, added, and/or inserted, having homology of 60% or higher to the amino acid sequence of SEQ ID NO: 2 or 4, and having a thioredoxin reductase activity.

3. A protein having a thioredoxin reductase activity, encoded by a DNA which hybridizes to the DNA comprising the nucleotide sequence of SEQ ID NO: 1 or 3.

4. A protein comprising the amino acid sequence of SEQ ID NO: 2 or 4 in which one or more amino acids are replaced, deleted, added, and/or inserted and having an XIAP-binding activity.

5. A protein encoded by a DNA which hybridizes to the DNA comprising the nucleotide sequence of SEQ ID NO: 1 or 3, and having an XIAP-binding activity.

6. An antibody binding to the protein of any one of claims 1 to 5.

7. A cDNA encoding the protein of any one of claims 1 to 5.

8. A cDNA comprising a protein coding region of the nucleotide sequence of SEQ ID NO: 1 or 3.

9. A vector into which the DNA of claim 7 or 8 has been inserted.

10. A transformant carrying the vector of claim 9.

11. A method for producing the protein of any one of claims 1 to 5, the method containing culturing the transformant of claim 10.

12. An antisense DNA against all or a part of the cDNA of claim 7.

13. An oligonucleotide comprising a strand of at least 15 nucleotides and hybridizing to the cDNA of claim 7.

14. A DNA encoding a protein with a thioredoxin reductase activity and comprising the first exon or the second exon, and the third to the nineteenth exons below:

the first exon, SEQ ID NO: 18;

the second exon, SEQ ID NO: 19;

the third exon, SEQ ID NO: 20;
 the forth exon, SEQ ID NO: 21;
 the fifth exon, SEQ ID NO: 22;
 the sixth exon, SEQ ID NO: 23;
 5 the seventh exon, SEQ ID NO: 24;
 the eighth exon, SEQ ID NO: 25;
 the ninth exon, SEQ ID NO: 26;
 the tenth exon, SEQ ID NO: 27;
 the eleventh exon, SEQ ID NO: 28;
 10 the twelfth exon, SEQ ID NO: 29;
 the thirteenth exon, SEQ ID NO: 30;
 the fourteenth exon, SEQ ID NO: 31;
 the fifteenth exon, SEQ ID NO: 32;
 the sixteenth exon, SEQ ID NO: 33;
 the seventeenth exon, SEQ ID NO: 34;
 the eighteenth exon, SEQ ID NO: 35; and
 the nineteenth exon, SEQ ID NO: 36.

15. The DNA of claim 14, described by SEQ ID NO: 37.

16. A DNA hybridizing to the nucleotide sequence of any one of
 20 SEQ ID NOs: 18 to 36 or a part thereof, which can hybridize to human
 chromosome 22q11.2.

17. A DNA which can hybridize to all or a part of a portion of
 the nucleotide sequence of SEQ ID NO: 37, the portion non-overlapping
 with the nucleotide sequences of SEQ ID NOs: 18 to 36.

25 18. A method for screening a compound having an activity of
 inhibiting a binding of XIAP with the binding factor, the method
 comprising the steps of:

(a) contacting simultaneously a candidate substance as a subject for
 screening, and XIAP with the protein of claim 2, or

30 (a)' contacting a candidate substance as a subject for screening with
 XIAP, and then, further contacting with the protein of claim 2,

(b) determining the amount of the protein of claim 2 which binds and/or
 does not bind to XIAP, and

(c) selecting a compound which inhibits binding of XIAP with the protein
 35 of claim 2.

19. A method for screening a compound having an activity of

promoting or inhibiting an enzyme activity of thioredoxin reductase II, the method comprising the steps of:

(a) contacting a candidate substance as a subject for screening with the protein of any one of claims 1 to 3,

5 (b) observing the change in a thioredoxin reductase activity of the protein of any one of claims 1 to 3, and

(c) selecting a compound which promotes or inhibits an enzyme activity of thioredoxin reductase II.

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